STORAGE

No. 10. Vol. II. SEPTEMBER 1905. 10 Cts. $1.00 a Year.

Reclamation Projects Number

FOR CALIFORNIA

FRONTISPIECE—IRON CANYON, SACRAMENTO VALLEY
(Seat of the Mightiest Irrigation Project)

WHAT THE NATIONAL RECLAMATION ACT IS — THE EDITORS

GOVERNMENT IRRIGATION IN CALIFORNIA
HON. FRANK W. MONDELL, Chairman National House Committee on Irrigation

HOW THE PEOPLE CAN CO-OPERATE
F. H. NEWELL ESQ., Chief of the United States Reclamation Service

WORK OF EXPERIMENT STATIONS IN CALIFORNIA
PROFESSOR SAMUEL FORTIER, University of California

THE KLAMATH RECLAMATION PROJECT
H. L. HOLGATE, ESQ., Attorney for Klamath Project

THE YUMA RECLAMATION PROJECT
D. W. MURPHY, ESQ., Acting Supervising Engineer, Yuma Project

THE SACRAMENTO VALLEY PROJECT
S. G. BENNETT, ESQ., Engineer, United States Reclamation Service

RECLAMATION OF SWAMP LANDS
JOHN W. FERRIS ESQ., C. E.

AND OTHER ARTICLES

THE CALIFORNIA PROMOTION COMMITTEE

SAN FRANCISCO

FOR CALIFORNIA.

SEPTEMBER, 1905.

Application Made at San Francisco Postoffice
For Entry as Second-Class Matter

THE CALIFORNIA PROMOTION COMMITTEE

(THE STATE CENTRAL ORGANIZATION)

THE PURPOSE OF THE COMMITTEE IS TO GIVE TO THE WORLD RELIABLE AND UNBIASED INFORMATION REGARDING THE RESOURCES OF AND THE OPPORTUNITIES IN CALIFORNIA. FOR CALIFORNIA IS PUBLISHED TO ASSIST IN CARRYING OUT THE OBJECTS IN VIEW.

CORRESPONDENCE INVITED

SPECIAL NUMBERS OF FOR CALIFORNIA, DEVOTED EXCLUSIVELY TO VARIOUS INDUSTRIAL SUBJECTS, ANY THREE NUMBERS FOR TWENTY-FIVE CENTS

1905

January	Results Number
February	Irrigation Number
March	Vegetable Garden Number
April	Manufactures Number
May	Structural Minerals Number
June	Out-Door Number
July	Electric-Power Number
August	Viticulture Number
September	Reclamation Projects Number

FOR CALIFORNIA

A MONTHLY PUBLICATION

"FOR THOSE WHO DESIRE THE BEST THERE IS IN LIFE."

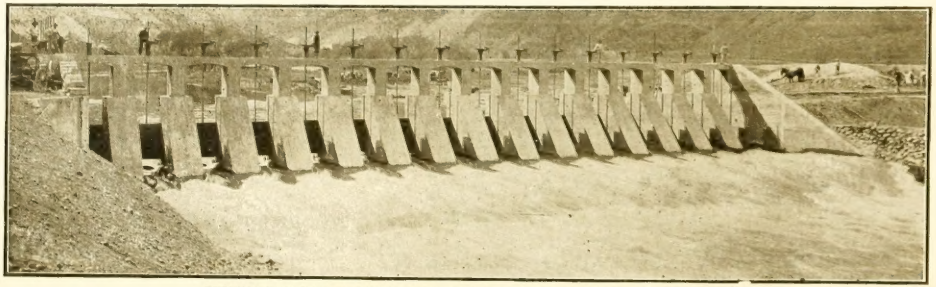
NO ADVERTISEMENTS WILL APPEAR IN FOR CALIFORNIA

THE CALIFORNIA PROMOTION COMMITTEE

25 NEW MONTGOMERY STREET

SAN FRANCISCO

IRON CANYON, SACRAMENTO RIVER, ABOVE RED BLUFF, CALIFORNIA



OPENING THE FLOOD-GATES OF THE TRUCKEE-CARSON PROJECT, JUNE 17TH, 1905

THE PICTURE ABOVE—IRON CANYON SHOWS ONE OF THE PROPOSED SEVEN HUGE UNITS OF THE SACRAMENTO VALLEY IRRIGATION PROJECT. THIS IS THE LARGEST AND MOST COMPREHENSIVE IRRIGATION PROJECT IN THE UNITED STATES.

THE LOWER PICTURE—IMPREGNABLE CONCRETE HEADGATES ON THE TRUCKEE-CARSON PROJECT, NEVADA, SHOWING THE FINISHED CHARACTER OF THE WORK UNDER THE NATIONAL RECLAMATION ACT.

What the National Reclamation Act Is

THE National Reclamation Act, sometimes called the National Irrigation Law, became a law on June 17th, 1902. (32 Stat. 388).

This act provides that all moneys received from the sale of public lands in Arizona, California, Colorado, Idaho, Kansas, Montana, Nebraska, Nevada, New Mexico, North Dakota, Oklahoma, Oregon, South Dakota, Utah, Washington and Wyoming shall be set aside as a special fund in the United States Treasury to be known as the "Reclamation Fund." The Reclamation Fund excepts the five per cent of the proceeds set aside for educational and other purposes.

At the present time the Reclamation Fund amounts to about $28,000,000 and is increasing at the rate of $4,000,000 a year.

Under the Reclamation Act the Fund is "to be used in the examination and survey for and the construction and maintenance of irrigation works for the storage, diversion and development of waters for the reclamation of arid and semi-arid lands" in the sixteen States and Territories.

The purpose of the Government under the National Reclamation Act is to make homes for homeseekers.

After the irrigation works are constructed, the sums expended are to be returned to the Government in ten annual installments. Thus the Reclamation Fund is self-continuing, and after irrigation works have been constructed the money can be used for further development, as it is constantly returned to the Reclamation Fund by the settlers.

The public lands affected by the Reclamation Act are subject to entry under the provisions of the homestead laws in tracts of not less than 40 nor more than 160 acres. No right to the use of water for land in private ownership shall be sold for a tract exceeding 160 acres to any one land owner.

The land owner must be an actual bona fide resident on the land and the settler on the public domain must be a bona fide settler.

Any one desiring further information should write to the General Land Office, Department of the Interior, Washington, D. C., for the circular from the General Land Office issued January 25, 1904. This circular shows the manner of proceeding to obtain title to public lands under the homestead, desert land and other laws. In this volume the National Reclamation Act is printed in full.

EVERY American will be in accord with the great work which the Federal Government is doing under the National Reclamation Act.

Every Californian it is believed and everyone who is interested in California will find much of value in this number of FOR CALIFORNIA. This number is called the "Reclamation Projects Number" because it deals with the projects which the Government has under consideration, or under way, in California under the National Reclamation Act.

The first article in this number, "Opportunities for Government Irrigation in California as I Saw Them," comes from Hon. Frank W. Mondell of Wyoming, Chairman of the House Commitee on Irrigation. Three splendid articles tell of three national projects in California. Professor Fortier tells of the work of the experiment stations, and Mr. Newell suggests how all may co-operate with the government movement.

This month's issue also contains an article by Mr. John W. Ferris, C. E., dealing with the improvement of the Sacramento River and the reclamation of one million acres of swamp land.

NOTE—Every article in the Reclamation Projects Number of For California was written expressly for this issue.

Opportunities For Government Irrigation in California As I Saw Them.

HON. FRANK W. MONDELL, of Wyoming, Chairman of the National House Committee on Irrigation

OUR Congressional Irrigation Party, consisting of Members of the House and Senate Committees on Irrigation of Arid Lands, spent a most enjoyable, interesting, and, from the standpoint of increased knowledge of irrigation conditions, profitable week in California in June of this year.

The Southern Pacific Railroad gave us splendid special train service; its officials rendered most thoughtful and valuable assistance in planning and arranging our itinerary; and the business organizations and people of every locality visited left nothing undone to make our sojourn delightful and to afford us every possible facility for seeing the results of irrigation development. In addition to this, the officers of the National Reclamation Service, who are charged with the development of irrigation projects in California gave us the benefit of their wide and thorough information and knowledge of opportunities and conditions throughout the State.

It is from the standpoint of the knowledge acquired on the trip in question, as well as on the occasion of former visits to California, and from a somewhat careful study of the past history and present prospects of irrigation development in California as effected by the laws, customs and decisions relating thereto, that I respond to the invitation to write briefly on "The Opportunities for Government Irrigation in California as I Saw Them."

A stranger to the irrigation development of California on his first visit to the State is invariably greatly impressed with the remarkable character and extent of such development and the marvellously successful results which have been obtained thereby; but if he be interested in the subject of irrigation and take the trouble to investigate conditions, he will soon find himself even more impressed with the magnificent opportunities for further irrigation development, the vast extent of fertile lands and abundance of water supply still remaining to be utilized.

Nowhere in the arid region are to be found streams of such splendid volume with easily reclaimable adjacent areas of such great extent, favorable topography, and great fertility as are to be found in California to-day. In this condition of affairs, it requires no argument to demonstrate the possibility of enormous development by the construction of adequate irrigation works. With numerous and alluring opportunities stretching from the head of the Sacramento Valley to the southern line of the State, it would be impossible in the space of a brief article to specify and enumerate the particular advantages of each available project. Suffice it to say that with the people of the regions to be benefitted in active and complete harmony with the contemplated development; with questions of water-rights and available water supply and division of the land into small holdings, as contemplated by the National Reclamation Law, settled, there is abundant opportunity in California to expend profitably and to the vast advantage of the State and country in the construction of works under the National Irrigation Act a sum larger than the $28,000,000 now available for the entire country.

Of course no such sum as this can be used in California by the National Government, at least for many years to come; but the Reclamation Service stands ready to make a goodly beginning at an early date. Upon the officers of that Service rests the responsibility of determining, after taking all features and factors of each project into consideration, where the first expenditure may most profitably be made.

In this connection it is of very great importance that the people of the State at large as well as of the various localities directly interested should study carefully and give their best thought to overcoming those difficulties which must of necessity under present conditions hamper and somewhat delay irrigation development in the State, whether by the National Government or by private enterprise.

One of the obstacles to early and complete irrigation development in some localities in the State will no doubt sound strange to the average Californian: That is the absence of a united public opinion favorable to complete irrigation development and appreciative of its very great benefits. That such a condition should exist in any arid or semi-humid portion of a State which has made more splendid progress and achieved greater triumphs under irrigation than possibly any region in the world seems passing strange; but in some important localities it is a factor to be reckoned with.

Another feature of the situation in some localities not favorable to early and complete irrigation development is the existence of vast tracts of land in a single great corporate or individual ownership, a condition which must be changed before irrigation can be accomplished under the Reclamation Law. This division of large estates seems somewhat difficult of accomplishment in some localities by reason of the failure to appreciate fully the great increase in values which irrigation will bring.

But of vastly greater importance to the future development of the State by irrigation and to the peace and prosperity of the lands already under irrigation than are the features of the situation above referred to is the question of the equitable, speedy, and final settlement of the question of rights to water already acquired and the adoption of some method and procedure for the just, orderly and economical acquirement of future rights. From an irrigation standpoint this is the paramount question in California to-day, and the extension of the irrigated area of the State whether under government auspices or private enterprise must of necessity be at least retarded if not in many instances prohibited by conditions under which it is impossible to determine absolutely in advance of expensive litigation the exact nature or extent of rights now established and therefore the amount of water available for further extension of the irrigated area. The friends of California and her future irrigation development cannot afford to ignore or attempt to minimize the difficulties that the present uncertainty as to the extent or volume of acquired rights, and therefore as to the amount of water in streams still available for irrigation in certain districts, place in the path of future development.

Each of the arid States presents some special favorable conditions as each has its peculiar difficulties in the further considerable extension of her irrigated areas. Perhaps none of the States and Territories to which the Reclamation Act applies presents on the whole and taking into consideration every factor such magnificent opportunities for extensive development as does California; and with the removal of the obstacles to which I have referred California will have a splendid future development under irrigation both through the agency of the National Government and by private enterprise.

Only those who have seen the marvelous changes wrought in the West through irrigation can appreciate the full significance of the National Reclamation Act. In building great storage reservoirs and diversion dams; in constructing huge canals, laterals and headgates, the National Government purposes to make homes for homeseekers through the bringing of water to the dry but fertile soil.

It is hoped that every newspaper, every organization and every citizen in California will co-operate with the Government movement for National irrigation. Publicity of the great work the Government is doing in the West to make more room for the homesteader will secure the desired result.

How The People Can Co-operate With the Government

F. H. NEWELL, Esq., Chief of the United States Reclamation Service

THE National Reclamation Act, approved on June 17, 1902, has for its object not merely the irrigation of arid lands but also the subdivision of the lands into tracts sufficient for the support of a family and not exceeding 160 acres. The execution of this Act would be a comparatively simple matter if all of the lands to be benefitted were in public ownership. Many of the best lands have, however, already passed out of the hands of the Government and are now held in large tracts by individuals and corporations.

Some of the present owners of these lands are desirous of having these lands reclaimed at public expense, the cost to be repaid in the future without profit or interest, but at the same time they are equally desirous of keeping the lands for future rise in value and are not willing to make concessions which may reduce the future gains. Many of them are willing to promise to subdivide the lands and put them on the market, but when called upon to execute a formal contract which will insure this sub-division within reasonable time they are apt to bring up various objections and to evade committing themselves. Great patience and firmness is therefore required on the part of the Government agents.

On the one hand is the popular clamor, stimulated by interested parties, to hurry the spending of the money of the Government in building the works, on the other hand are the obvious requirements of the law and the necessity of securing binding contracts or agreements by which the object of the law will be fulfilled.

In answer to the question, which has been asked as to how the people can co-operate with the Government in this matter, the first and fundamental proposition is for the people to understand the object of the law and to bring to the officers of the Reclamation Service suitable guarantees that the law will be fulfilled on their part. No Government money is to be spent in construction until definite and binding agreements have been made which will secure obedience to the law. Criticism for delay or abuse for not proceeding more rapidly will not suffice in the place of the definite and binding contracts on the part of the large land owners.

The owners of large tracts of land, as well as the small land owners should get together and request the Secretary of the Interior, by petition or otherwise, to consider the reclamation of certain areas pointing out as fully as practicable the source of water supply and the lands to be irrigated and stating that they are prepared to give full assurance that these lands will be sub-divided and placed in the hands of actual settlers by the time that the irrigation works are completed and the water is ready for delivery to the lands. If this is done the subsequent work of the engineers is greatly facilitated and the matter becomes largely one of feasibility of construction.

An equally important detail to be settled by the present land owners is that pertaining to existing water rights. All of these must be fully adjusted so that the Reclamation Service will not be called upon to waste time and money in the vain attempt to settle existing quarrels. It frequently happens that when all of the valid claims are finally adjusted these average more than the entire flow of the river or even more than can be provided by complete storage. It is, therefore, impossible for the Government to secure any water; time spent in engineering examinations would be wasted.

These matters of water rights are controlled by State Laws and can be settled only by the people themselves. Experience has shown that it is inadvisable for the officers of the Reclamation Service to attempt to interfere in such matters as, like most neighborhood quarrels, whenever a third party intervenes all the contending forces unite against him.

WORK OF OFFICE OF EXPERIMENT STATIONS FOR IRRIGATION.

The Reclamation Act was passed with a view of reclaiming public lands and incidentally some private lands. It is applicable in part only to the situation where private lands predominate, and to be effective in such cases must be supplemental by voluntary action on the part of the present land owners and by agreements or decisions covering the points above named. There is no intent or desire on the part of the Reclamation Service to interfere with State or Court control of the waters and even the appearance of doing so is to be avoided. The people of California have in their own hands the initiative as regards any reclamation of private lands. When they have taken this initiative the Reclamation Service will be glad to assist, upon suitable authority given by the Secretary of the Interior.

To repeat the essentials of co-operation by the people of California; they must, first, show their wish for Government construction; second, their willingness to conform to the letter and spirit of the law regarding subdivision of lands; and, third, settle under State laws all questions as to the rights to the waters.

THE WORK OF THE OFFICE OF EXPERIMENT STATIONS FOR IRRIGATION IN CALIFORNIA

By Prof. SAMUEL FORTIER, Irrigation Engineer, in charge of Pacific District

THERE are now 35,000 irrigated farms in California. Every day the owners of these farms ply their calling they are confronted with practical problems of irrigation practice, a better knowledge of which would lessen their expenses and increase their profits. The Office of Experiment Stations of the United States Department of Agriculture, through its division of irrigation and drainage investigations, is endeavoring to help the farmers of the State solve these problems rightly.

When a farm is first being prepared for irrigation, its owner, if he be wise, will desire to adopt that method of applying water which the experience of the most successful has already shown to be best suited to his conditions. As a part of the work of the Office of Experiment Stations in California, the experience of the best irrigators in preparing land and applying water, not only in California but also in the other western States, has been ascertained and presented in convenient form (Bulletin 145, Office of Experiment Stations.) This bulletin, with its descriptions and illustrations, furnishes a guide not only for the beginner, but also for the experienced irrigator who is willing to learn from the successes or failures of others.

As soon as a farmer opens his lateral headgate he is confronted with the problem of the duty of water. He needs to know not only how much water to apply to supply the needs of his crops, but also how much to allow for the losses by percolation and evaporation. Through the use of field plats and specially designed galvanized iron tanks, in both of which crops are being grown and the amounts of water applied are being carefully measured, the Office of Experiment Stations is endeavoring to learn the essential facts regarding this problem.

Something over 200,000 acres is now irrigated in California by pumping. The use of pumping plants involves not only a large outlay for purchase and installation, but also a constant outlay for operation and maintenance. It also involves a knowledge of machinery not usually possessed by farmers. For each class of work there is generally a particular type of pumping plant that will give the best results, and proper economy requires that that particular type and not some other should be used. For the purpose of ascertaining from actual field conditions what plants are best

for the different classes of irrigation, and how the different plants should be installed and operated to work to the best advantage, the Office of Experiment Stations has been testing a large number of irrigation pumps throughout the State. The results of some of these tests are now in press and those from the remainder will be published during the coming year.

Important in irrigation as are the subjects already mentioned—proper methods of preparing land for irrigation and of applying water, the duty of water and evaporation losses, and pumping for irrigation—there are other subjects so pressing that the Office of Experiment Stations has not been able to let them pass unheeded. The problems of two of the leading irrigation districts of the State have shown themselves worthy of attention and a report dealing with them is now in press. The rise of ground water in irrigated sections and the resulting damage and necessity for drainage are being watched in several parts of the State. The feasibility of irrigating grain in the San Joaquin Valley and the best methods of applying water to it are under careful study. A bulletin is being prepared designed to show the economy of permanent over temporary structures on California canals and ditches. The relative economy of deep and shallow furrows in applying water to orchards, particularly to the citrus orchards of southern California, is under careful consideration, some of the principal field work of the past season having been carried on in connection with this subject in the district around Riverside.

In brief, the irrigation work of the Office of Experiment Stations in California, as well as in the other western States, is the work of the irrigator. His problems are its problems. What he learns the Office of Experiment Stations is seeking to learn, and wherever he needs help the Office of Experiment Stations is seeking to furnish it.

THE KLAMATH RECLAMATION PROJECT

H. L. HOLGATE, Esq., Attorney for Klamath Project

IN the rock of rough marble the sculptor saw an angel. His practised hand chiseled away the imprisoning stone, revealing to the world a figure of beauty. With an equally prescient eye the United States Reclamation Service sees in the Klamath Plateau of Southern Oregon and Northern California, a land of thousands of prosperous farm homes, and with equal skill the engineers of the service will reveal the agricultural possibilities of this undeveloped region.

Under the Klamath Project, the official name of this irrigation system to be constructed by the Government, lie 250,000 acres of irrigable land. About 145,000 acres are in private ownership and 105,000 acres are government lands. The public lands will be subdivided into tracts averaging 80 acres in extent, and under the law the private lands must be subdivided into farms not exceeding 160 acres under one ownership. The average size of all the farms will probably be less than 100 acres and the total number of farms will be something more than 2,500. These farms and the immense timber resources of the country will easily support a population of 50,000 people.

The Engineers of the Service are not here confronted with difficult engineering problems. The water supply is abundant and nature has provided the necessary reservoirs. The larger area of the irrigable land, about 190,000 acres, will be supplied with water drawn from Upper Klamath Lake situated in Klamath County, Oregon. This lake has an area of 60,000 acres, an average depth of about eight feet and an elevation of 4142 feet. The lake receives the drainage of an immense watershed. Its

only outlet, over a rim-rock, is Link River, a stream which has a length of about one mile and a fall in that distance of 56 feet, emptying into Lower Klamath Lake. This latter lake extends from Klamath Falls, Oregon to Laird, Siskiyou County, California, a distance of 25 miles. The depth of water varies from one to twelve feet and a heavy growth of tules marks the greater area. The lake has an elevation of 4086 feet and an area of about 80,000 acres. Except for a large drainage channel, which will probably be navigable, Lower Klamath Lake will be reclaimed by drainage and evaporation and subsequent irrigation. Its outlet at Keno into the Klamath River will be deepened twelve feet by a rock cut.

The second reservoir is Clear Lake, in Modoc County, California, where a restraining dam must be constructed. The outlet of the lake is Lost River which flows north through rich valley lands in Oregon and then turns south, emptying after a course of 60 miles into Tule Lake, situated partly in Oregon but chiefly in California. Clear Lake has an elevation of 4533 feet. Its waters will be utilized in irrigating about 60,000 acres of land in Langells, Yonna and Poe Valleys. Lost River, upon leaving Poe Valley, debouches upon the Klamath Plateau and from this point its waters will be diverted, through a drainage channel, into Klamath River, thus depriving Tule Lake of its source of supply. It is expected that by evaporation 50,000 acres now covered by the waters of Tule Lake, which has no surface outlet, will be reclaimed.

The estimated cost of the Reclamation System is $4,500,000 or an average cost of $18 per acre, the smallest cost per acre of any project whose construction the Government has yet undertaken. The Government is ready to advertise for bids for the initial work and construction will probably begin this year.

There will be no public land under the project subject to entry for several years. The Government holdings are practically confined to the water-covered lake lands and will not be thrown open to entry until fully reclaimed and ready for cultivation. As the Government will not sell a water right for more than 160 acres to any one person, a considerable acreage of the private holdings is upon the market at prices ranging from $10 to $50 per acre, depending upon the amount of improvements, state of cultivation, quality of soil and nearness to market. For particular information relative to land the officials of the Reclamation Service refer inquirers to the Secretary of the Klamath Water Users' Association, Klamath Falls, Oregon.

The growing season, owing to the high altitude and consequent frost, is comparatively short, but the soil is very fertile and the grasses, grains, vegetables and the hardier fruits are successfully grown. Great areas of mountain and hill country stretch away in every direction, affording excellent outrange, and even under present conditions some 25,000 head of beef cattle are driven to market annually. Klamath County sells each year to the United States army many horses which bring from $125 to $150 each. Beets, grown experimentally, show a high percentage of sugar. Tests show the tule soil to be extremely rich and especially adapted to the growing of celery, asparagus, potatoes, and fodder for dairy animals.

The timber resources of the Klamath region are enormous. The estimates of experts as to the pine and red fir forests tributary to Upper Klamath Lake, range from 10 billion to 15 billion feet.

The climate is healthful and attractive. Many delightful nooks and corners, forest-covered mountains, expansive lakes and crystalline, trout stocked streams tempt the city folk who take summer outings; and not the least important is the beautiful and mysterious Crater Lake—one of the wonders of the West. The shot-gun devotee finds nowhere such duck, geese and swan shooting as these mountain lakes afford.

The Klamath country is one of vast undeveloped resources of vast possibilities. With the construction of the government irrigation system and the building of railroads to carry the products to market, both achievements of the immediate future, golden opportunities for the farmer, the stock-man, the manufacturer and the business man will present themselves.

The Yuma Reclamation Project

D. W. MURPHY, Esq., Acting Supervising Engineer, Yuma Project

THE first work of actual construction in California under the terms of the National Reclamation Act of 1902 has been begun on the Yuma Project on the Lower Colorado River.

The lands which it is proposed to irrigate under this project include the valley lands of the Colorado and Gila Rivers in the vicinity of Yuma, and are situated in both California and Arizona. The total area of valley lands which will be brought under irrigation is about 90,000 acres, of which 17,000 acres are in California, and include the Yuma Indian Reservation.

Preliminary investigations on this project were begun under the direction of J. B. Lippincott, Supervising Engineer, during the winter of 1903-4. These investigations consisted of making topographic surveys of the irrigable lands for the purpose of canal locations, and for a feasible site for a diversion dam to be constructed across the Colorado River. The latter site was selected at what is known as the Laguna Dam Site, situated about twelve miles above Yuma. At this point the valley of the Colorado is contracted by hills of solid granite, which project down to near the main channel.

Water will be diverted at the Laguna Dam Site and conveyed to the irrigable lands by main canals on either side of the river. These main canals will be constructed along the foot of the mesa and at an elevation to permit of the distribution of the waters to valley lands below. On the California side there will be one main canal of capacity 200 second-feet, length 10 miles, with three main laterals. Total length of canal and main laterals, 22 miles.

On the Arizona side there will be one main canal, capacity 1600 second-feet, 16 miles long, with two branches 22 and 15 miles long, respectively, and 26 main laterals 80 miles long. Total length of canal and main laterals 132 miles.

The main canal on the Arizona side will be carried across the Gila River by means of an inverted siphon built of concrete, reinforced with steel, and sunk below the bed of the stream.

The Laguna Dam is of the Indian weir type, built of loose rock with cut-off walls of concrete and sheet piling. The slope of the down-stream face of the dam is 1 vertical on 12 horizontal. Total length of dam 4,780 feet, with a maximum height of 19 feet in the river channel, and 10 feet minimum across the lower reaches of the valley. Maximum width of dam 257 feet. The contents of the dam are as follows: 356,500 cu. yds. loose rock fill, 27,150 cu. yds. rubble concrete masonry, 80,000 sq. yds. rubble pavement 2 inches thick, and 53,000 lineal feet of sheet piling. The dam will raise the low water level in the river about 10 feet and form a settling basin above of an average width of approximately 1 mile and 10 miles long.

The purpose of the dam is two-fold,—that of raising the water of the river to such a height that it can be economically distributed to the irrigable lands, and also to form a settling basin for the disposal of the heavier silts which are carried in large quantities by the river, and which if allowed to enter the canals would become a serious menace to their carrying capacity.

Sluiceways will be constructed at either end of the dam excavated in the solid granite to the level of the grade of the river. The sluiceway on the Arizona side will be 116 feet wide, 800 feet long and 18 feet deep, and closed by three cast-iron gates of the stony type, each 33 1-3 feet wide and 18 feet high. The sluiceway on the California side will be 40 feet wide, 800 feet long and 18 feet deep, and closed by one gate similar to those on the Arizona side. The gates will be operated by power driven hoisting machinery.

The combined capacities of the two sluiceways with the river at flood is 31,000 second-feet. These sluiceways will be used for clearing the settling basin of silt deposits.

The headgates of the canals are arranged so as to take water from the surface of the reservoir. By this means only the lighter portions of the silts are taken into the canals. The velocity in the latter is sufficient to carry through the light silts and prevent the canals from being silted up.

On the California side there will be one main canal of 200 second-feet capacity, and 10 miles long, with 3 main laterals. Total length of canal and laterals 22 miles. On the Arizona side there will be one main canal of 1300 second-feet capacity, and 16 miles long, with two branch canals 21 and 15 miles long, respectively, and 26 main laterals with an aggregate length of 80 miles. Total length of canal and main laterals, 132 miles.

The Valley lands will be protected from inundation during flood seasons by means of dikes. These will be constructed on both sides of the Gila River, and on the Colorado from the Laguna Dam to the Mexican Boundary. These dikes will be of earth 8 feet wide on top, with side slopes of 3 horizontal to 1 vertical on the land side. The average height of these dikes is about 7 1-2 feet. Total length in California 14 1-2 miles, and Arizona 59 miles. In addition to the above flood protections, a complete system of drainage is contemplated to prevent the low lands becoming water-logged and alkaline.

Both the reports of the Department of Agriculture and past farming experience show that the soils of the Yuma Valley are very fertile. The silts of the Colorado River have high fertilizing properties, and as not all of them can be removed at the headworks, will be a constant factor in maintaining the present high standard of quality of the soils. The valley lands are suitable for the growth ot staples, and particularly forage plants. The climate is such that crops grow throughout the greater portion of the year.

The contract for the construction of the Laguna Dam has been awarded to J. G. White & Co. of New York, and work on this dam has been begun. Proposals for the building of 12 miles of dikes have been asked for by the Secretary of the Interior, to be opened August 17th.

Final plans for other portions of the work have been prepared, and definite locations for portions of the main canals have already been made. It is proposed to carry on other portions of the work abreast with the construction of the Laguna Dam, in order that water may be delivered to portions of the lands at an early date after the completion of that structure.

The work of the Yuma Project is being carried on under the supervision of Mr. J. B. Lippincott, Supervising Engineer, Mr. Homer Hamlin, District Engineer, having direct charge of the work.

THE SACRAMENTO VALLEY PROJECT

S. G. BENNETT, Esq., Engineer, U. S. Reclamation Service

THE largest body of arable land in California is usually termed "The Great Valley of California," though it has recently been called the "heart of California." This valley is 400 miles in length and has an average width of 40 miles. The entire basin, including mountains and valley, has an area of 58,000 square miles. The Sacramento, or northern portion of the Great Valley, is 140 miles in length and 40 miles in width, and contains 2,661,120 acres, exclusive of the Sutter Buttes and the channel surface of perennial streams.

Taken as a whole the Sacramento Valley may be said to be of unsurpassed fertility, though its productive capacity for cereals has been greatly reduced by the long continued growth of this crop. To restore

its fertility rotation in crops is necessary. This, however, is impossible without irrigation. Comparatively little progress has been made in irrigation, though probably 2,000,000 acres will ultimately be irrigated in this valley. The Interior Department, through the Reclamation Service and the topographical branch of the U. S. Geological Survey, is now engaged in collecting facts upon which to base plans for irrigating this vast area. The work includes the determination of stream flow, the survey of reservoir sites, the designing of dams and other irrigation works, and the survey of the floor of the valley. The State of California has been co-operating with the Federal Government and has furnished some of the funds necessary to carry on this preliminary work.

The drainage basin of the Sacramento River contains approximately 26,000 square miles. The estimated mean annual run-off from this area is nearly 26,000,000 acre-feet, or almost sufficient water to cover the entire valley 10 feet deep.

The run-off from the watershed of the Sacramento River at Iron Canyon above Red Bluff for the months of January to April, inclusive, the four months of greatest discharge during a period of nine years ending with 1904, was 5,420,000 acre-feet, or 55 per cent. of the mean annual flow. The discharge from May to September, inclusive, the five months when there is the greatest need of water for irrigation, is less than 24 per cent of the total annual flow.

If the entire valley is to be irrigated, these facts emphasize the importance and necessity of storing the flood flow for use during the irrigation season. Numerous reservoir sites have been surveyed for this purpose. Those presenting the greatest advantages for economic construction which have thus far been estimated upon are: Guenoc, Clear Lake, Indian Valley, Briscoe, East Park, Millsite, Big Valley and Iron Canyon. From these eight sites the annual summer flow of the Sacramento River can be increased during the latter part of the irrigation season by more than 1,500,000 acre-feet of water, at a total cost of $5,800,000, or at the rate of $3.76 per acre-foot for construction of storage works. Liberated during the months of July, August and September, this would increase the flow of the Sacramento River and its west side tributaries by about 8,000 cubic feet per second. The low summer flow at Red Bluff is 4,000 second-feet.

In addition to the above reservoirs, six reservoir sites of large capacity are being surveyed during the present field season.

These reservoirs could be so constructed and regulated that, in addition to their value for irrigation purposes, they would play an important part in retarding the flood waves that have been so destructive to levees and crops in the lower Sacramento Valley, and materially lessen the cost and difficulty of reclaiming the overflowed lands, which exceeded 600,000 acres in 1904.

A board of engineers from the U. S. Corps of Engineers has been appointed to continue the study of the flood and overflow conditions and navigation problems of the Sacramento River. It is hoped that this work can be carried out in some such way as similar work is being done on the lower Mississippi River.

Until the topographic and soil surveys of the valley are completed, it will be impossible to give the location of the canals, the amount of land that can be irrigated, or the cost of the Sacramento Valley Irrigation Project. Because of the large area of fertile land; the large water supply; the great number of high priced products that can be grown; the good transportation facilities; and the nearness to market, this project presents the greatest opportunity for irrigation development to be found in America. When the high valley lands above the zone of overflow have been provided with irrigation systems and the swamp lands reclaimed and irrigated, it is believed that the Sacramento Valley will be capable of sustaining a population as great as is now being sustained by the entire State.

Reclamation of Swamp Lands

JOHN W. FERRIS, C. E.

AN earnest movement has been on foot during the past year, designed to compass the reclamation of the vast body of overflowed lands in the valley and delta of the Sacramento River in this State.

These lands when reclaimed, are "as rich as the richest on earth" and embrace something over a million acres.

Individual effort has already accomplished much in the direction of reclaiming these lands.

Grand Island, Pierson District, Sutter Island, Roberts Island, Union Island and other tracts show what may be done in the way of safe reclamation and attest, in a practical way, to the productive value of the land.

On these reclaimed lands are grown much of the vegetable product of the State: Vast fields of potatoes, onions, beans, asparagus and grain are the wonder of visitors who are taken to see them; and astonishment is frequently expressed that the reclamation of the land lying unreclaimed is not proceeded with.

Whilst a measure of success has undoubtedly been attained, however, many failures have been recorded; and the land reclaimed has much of it cost so high for embanking that there is little measure of profit, and a great deal of risk, attending this class of operation.

It is probably safe to say that the land, so far, successfully reclaimed has cost an average of $100 an acre; which is above its selling value at the present time when in a fit state for cultivation.

It is realized that the reclamation of any further material area, by limiting the area now serving as reservoir to equalize the effect of sudden freshet, must increase the dangers not only of the newly reclaimed tracts but of the area heretofore diked, and necessitate a material addition to the existing embankments. In other words, it is realized by those considering the problem that the river channels are insufficient to handle the volume of flood water presented to them; and the present effort has been in the direction of determining what rectification of existing channels or construction of new channels is necessary to warrant the further work required to render productive the territory now subject to periodical overflow.

As a result of the agitation and discussion of the problem an organization of the Swamp land owners known as the "River Improvement and Drainage Association" has been effected, and at its instigation a Commission of Engineers of high standing was appointed and a report submitted by it dealing in the most thorough manner with the features of the problem.

The matter resolves itself into the question of how the funds may be provided to carry out the work recommended.

Land owners claim that the deterioration of the river is to a great extent the cause that has prevented the prosecution of the reclamation of the overflowed lands; and say that little more would be needed than to restore the condition of the channels to that existing when the swamp lands were conveyed by the Federal Government to the State and by the State to their present owners.

The obligation of the Federal Government to maintain the navigable waters of the several States is one fully recognized, and from the fact that in recognition of the present movement Congress has taken the preliminary step of creating a Commission of U. S. Engineers to prepare a report on the condition of the Sacramento River and its tributaries, it is confidently believed that the Federal Government will do its share in the work. The land owners ask the State to supplement the work of the Federal Government in restoring the "original condition" of the channels to the extent of making them competent to transmit the flood wave to tide water, and

are ready to pledge themselves to carry out the further work of reclamation.

It would not be fair to look on this movement as one to reclaim the lands of individuals at the expense of the State and Federal Governments. No reclamation work whatever is asked; nothing more than providing such channels to carry flood waters as may justify the reclamation of the land.

Surely the State is justified in doing something to add so valuable a territory to her productive area. The assessed valuation for taxing purposes of Reclaimed Swamp Land is ten times greater than of that which remains untouched, and further benefit to the State of maintaining a population engaged in the intensive farming this land warrants is apparent to all.

Of course such great Government projects as the improvement of harbors, etc., are not dealt with in this issue which is devoted exclusively to that work which will make homes for homeseekers by Government assistance. There are in California many regions not mentioned in this issue which have been considered somewhat unofficially perhaps for government work under the reclamation act.

The great work of reclamation now being undertaken by the National Government is of vital interest to every Californian, whether he be a prospective settler or not. It brings water, the Life of the Land, to enrich the arid tracts as if by touch of a magic wand, studding the desert with happy homes; it is a movement of special interest to California sociologically as well as industrially. The impetus given to desirable immigration by the new and fertile lands will mean increased prosperity for the State at large, and it is hoped that all sections will unite to further the movement for reclamation.

Irrigation means making waste places populous; it means more than that. Irrigation in California means that the land can be cultivated the year around, and even where the rainfall is sufficient for ordinary crops. Irrigation is practiced with success in California to make the earth bring forth more than it would yield under usual conditions.

With California's all-the-year climate, irrigation in this State means more than it means to perhaps any other region of similar area.

To assist in the Government movement for National Irrigation, California must have a united people in this work and a united Congressional Delegation at Washington.

The Government is doing the great work of irrigation in the West, under the National Reclamation Act, to make room for the homesteader, to create a new frontier. Therefore, it has wisely limited the size of the homestead which any man may take up to 160 acres. Although the Government endeavors, as far as possible, to bring water to available Government lands, yet in the event that private owners are willing to subdivide their lands and in other ways comply with the National Reclamation Act, the Government will undertake the construction of irrigation works even where the land is in private ownership.

In California much of the best land for Government irrigation is in huge private holdings. It is believed that every great land owner in California will be willing to sign a contract to subdivide in order that the Government may proceed as rapidly as possible to construct irrigation works under the National Reclamation Act.

Already owners of more than seventy huge tracts of land have signified to the California Promotion Committee their willingness to subdivide their lands for the benefit of intending settlers. This shows which way the wind blows and may be taken as an indication that when the Government is ready to go ahead our patriotic landed proprietors will be willing and ready to cooperate.

THE CALIFORNIA PROMOTION COMMITTEE

ASSOCIATE MEMBERS

ADVERTISERS.
Varney & Green

ADDING MACHINES.
Burroughs Adding Machine Co.

ADVERTISING.
Cooper, F. J., Advertising Agency
Weil, William M.

AMMUNITION.
Union Metallic Cartridge Co.

ARCHITECTS.
Reid Bros.
Howard, John Galen

ATTORNEYS-AT-LAW.
Bancroft, Philip
Crothers, George E.
Deamer & Stetson
Felgenbaum, Sanford
Noyes, Bartholomew
Pippy, Geo. H.
Sullivan & Sullivan
Treat, R. B.

ACCOUNTANTS.
Amrath, J. W.

BANKS.
Anglo-California Bank
Bank of California
California Safe Deposit and Trust Co.
Central Trust Co.
Cullom, H. B. (Central Trust Co.)
French-American Bank
German Savings and Loan Society
Hibernia Savings and Loan Society
Italian-American Bank
London, Paris and American Bank
Market Street Bank
Mercantile Trust Co. of San Francisco
Mechanics' Savings Bank
Mutual Savings Bank
Pacific States Savings, Loan and Building Co.
Rollins, E. H., & Sons
Savings and Loan Society
Security Savings Bank
Wells-Fargo-Nevada National Bank

BARBER SUPPLIES.
Deckelman Bros.

BOILER WORKS.
Keystone Boiler Works

BOOKS AND STATIONERY.
Crocker, H. S. Co.
Cunningham, Curtis & Welch
Elder, Paul & Co.
McNutt, Kahn & Co.
Payot, Upham & Co.
Sanborn, Vail & Co.
San Francisco News Co.

BREWERS.
Brewers' Protective Assn.

BROKERS.
Brown, Edward & Sons
Toplitz, Jos. B.

CANNERIES.
California Fruit Canners' Association
Code-Portwood Canning Co.
Hunt Bros. & Co.
Jacobs, Isidor (California Canneries)

CAPITALISTS.
Borel, Antoine
Coleman, Robert L.
Murphy, B. F.
Giselman, William
Hopkins, E. W.
Mackay, Clarence
Marye, George F. Jr.
Meyer, Daniel
Pacific Improvement Co.
Phelan, James D.
Spreckels, Claus
Thompson, R. R.

CARPETS, LINOLEUM AND UPHOLSTERY GOODS.
Hulse, Bradford & Co.

CARPETS, UPHOLSTERY AND FURNITURE.
Hoffman, Henry, Jr. (W. J. Sloane & Co.)
Plum, Chas. M. & Co.

CATTLE AND SWINE DEALERS.
Pierce & Co.

CIGARS AND TOBACCO.
Gunst, M. A. & Co.
Judell, H. L. & Co.

CLOTHIERS.
Raphael, Inc.
Straus, Louis

COAL DEALERS.
Allen, Chas. R. Co.

COFFEE, TEAS AD SPICES.
Brandenstein, M. J. & Co.
Caswell, Geo. W. & Co.
Folger, J. A. & Co.
Hills Bros.
Jones-Paddock Co.
Schilling, A. & Co.
Thierbach, Chas. F. & Co.

COMMISSION & MANUFACTURERS' AGENTS.
Bacigalupi, Peter
Clarke, Sidney A.
Maillard & Schmiedell
Morgan & Allen
National Mfg. Co.
Rulofson, A. C. Co.
Thieben, Jos. & Co.

COMMISSION MERCHANTS.
Armsby, The J. K. Co.
Hilmer & Bredhoff
Horst, E. Clemens Co.
Witzel & Baker.

CONFECTIONERS.
Blum, Simon
De Martini Supply Co., The L.
Haas, Geo. & Son

CONTRACTORS.
City Street Improvement Co.

COOPERAGE.
California Barrel Co.
Richards, J. W.
Woerner Cooperage Co., David

CORDAGE.
Tubbs Cordage Co.

CORNICE WORKS.
Forderer Cornice Works.

CROCKERY AND GLASSWARE.
Anglo-American Crockery and Glassware Co.
Nathan-Dohrmann Co.

CUSTOM HOUSE BROKERS.
Mayhew, F. E. & Co.

DAIRY MACHINERY.
De Laval Dairy Supply Co.

DAIRY PRODUCE.
Dairymen's Ass'n of S. F.
Dairymen's Union of Cal.
Haight, Fred. B. & Co.

DENTISTS.
Fletcher, Thomas

DEPARTMENT STORE.
Emporium

DRY GOODS.
City of Paris Dry Goods Co.
Hale Bros.
Murphy-Grant Co.
Newman & Levinson
Weill, Raphael & Co. (Inc.)
Strauss, Levi & Co.
Strauss & Frohman
Weinstock, Lubin & Co.

DRIED FRUITS.
Guggenheim & Co.
Phoenix Packing Co.
Rosenberg Bros. & Co.

DYEING AND CLEANING.
Hickman, Henry
Thomas, F., Dye and Cleaning Works

EDUCATIONAL.
Ham, Charles H.

ENGINEERING AND CONSTRUCTION COMPANY.
California Engineering and Construction Co.

EXPORTERS, IMPORTERS AND COMMISSION MERCHANTS.
Castle Bros.
Getz Bros.
Jennings, Rufus P.

EXPRESS COMPANIES.
Wells-Fargo Express Co.

FACTORIES.
American Can Co.

FANCY GOODS.
Sachs Bros. & Co.

FARM IMPLEMENTS AND VEHICLES.
Baker & Hamilton
Hooker & Co.

FREIGHT COMPANY.
Transcontinental Freight Co.

OFFICE AND GENERAL FURNITURE.
Brenner, John Co.
Cordes Furniture Co.
Friedman, M. & Co.
Fuller, Geo. H., Desk Co.
Indianapolis Furniture Co.
McCann, Belcher & Allen
Sterling Furniture Co.
Weber, C. F. & Co.
Yawman & Erbe Mfg. Co.

GAS AND ELECTRIC CO.
San Francisco Gas and Electric Co.

GAS AND ELECTRICAL FIXTURES.
Day, Thomas Co.

GAS ENGINES AND SCALES.
Union Gas Engine Co.

GAS REGULATORS.
Gas Consumers' Association

GENERAL MERCHANDISE.
Smith's Cash Store.

GLASS COMPANY.
Illinois-Pacific Glass Co.

GOLD, SILVER and NICKEL PLATING WORKS.
Denniston, E. G.

HARDWARE.
Arnold Hardware Co.
French & Linforth
Froelich, Christian
Holbrook, Merrill & Stetson
Montague, W. W. & Co.
Pacific Hardware & Steel Co.
Tay, George H. Co.
Wiester & Co.

HATTERS.
Collins, Charles J.
Fisher & Co.
Friedlander Hat Co.
Triest & Co.

HOTELS.
Brooklyn Hotel
California Hotel
Commercial Hotel
Granada
Hotel Rafael
Hotel St. Francis.
International Hotel
Lick House
New Russ House
New Western Hotel
Palace Hotel
Richelieu

INSURANCE.
Commercial Union Assurance Co.
Fireman's Fund Insurance Co.
Forbes, Stanley (Mutual Life)
Hartford Fire Insurance Co.
National Fire Insurance Co.
Pacific Mutual Life Insurance of California
Royal and Queen Insurance Co.
Seely, Walter Hoff (Pacific Mutual Life)
The Liverpool, London and Globe Insurance Co.
Ward, C. H.

THE CALIFORNIA PROMOTION COMMITTEE

JEWELERS.
Carrau & Green
Judis, Alphonse Co.
Radke & Co.
Schussler, M. & Co.
Schweitzer, Joseph
Shreve & Co.

KNIT GOODS.
Pfister, J. J. Knitting Co.

LEATHER GOODS.
Harpham & Jansen

LIME AND CEMENT.
Holmes Lime Co.
Pacific Portland Cement Co.
Standard Portland Cement Co.

LITHOGRAPHERS.
Britton & Rey
Mutual Label Lithograph Co.
Union Lithographing Co.

LOANS.
C. H. Morrell
Finance and Security Co.

MACHINERY AND ENGINEERS' SUPPLIES.
Cyclops Iron Works
Harron, Rickard & McCone
Henshaw, Bulkley & Co.
Martin, John
Meese & Gottfried Co.
Merrall's Mill Co.
Moore, Charles C. & Co.
Pacific Tool and Supply Co.
Tatum & Bowen
Troy Laundry Machinery Co.

MANUFACTURERS ARTIFICIAL FLOWERS AND PLANTS.
Goehring, A.

MEN'S FURNISHING GOODS.
Atkins, R. C. & Sons
Bullock & Jones
Cluett, Peabody & Co.
Greenebaum, Weil & Michels
Neustadter Bros.
Roos Bros.

METER COMPANY.
Pacific Meter Co.

METAL WORKS.
Pacific Metal Works
Selby Smelting Works

MILLERS.
Del Monte Milling Co.
Port Costa Milling Co.
Sperry Flour Co.

MILLINERY.
Toplitz, Robt. L. & Co.

MOTION PICTURE PHOTOGRAPHS.
Miles Bros.

MINING ENGINEERS.
Callahan, H. C.
Spinks, Chas. H.

OPTICIANS.
California Optical Co.

OVERALLS AND SHIRTS.
Heynemann & Co.

OYSTER DEALERS.
Morgan Oyster Co.

PACKERS AND PROVISION DEALERS.
Bacons, Richard T.
Miller & Lux
Roth, Blum & Co.
Reimers, J. C. & Co.
Western Meat Co.

PACKERS OF CANNED FRUITS AND VEGETABLES.
California Fruit Canners' Association
Hunt Bros. Co.

PAINTS, OILS AND GLASS.
Bass-Hueter Paint Co.
Fuller, W. P. & Co.

PAINTERS.
Thos. Downing, Inc.

PAPER DEALERS.
Blake, Moffitt & Towne
Bonestell, Richardson & Co.
Union Pulp and Paper Co.

PATENT MEDICINE.
California Fig Syrup

PHYSICIANS.
Ballard, J. Stow
Bryant, Edgar R.
Plachel, Kaspar (oculist)
Rosenstirn, Julius
Sartori, H. J.

PHARMACIST.
Kelly, F. S.
Martin, Henry J.
Redington & Co.
Schmidt, Val

PHOTOGRAPHERS
Miles Bros.

PIANOS AND MUSICAL MERCHANDISE.
Allen, Wiley B. Co.
Maury, Byron
Sherman, Clay & Co.

POTTERY AND TERRA COTTA.
Clarke, N. & Sons
Gladding, McBean & Co.

POWER COMPANIES.
Koster, F. J. (North Mountain Power Co.)

PRESS CLIPPING BUREAU.
Allen's

PRINTERS & PUBLISHERS.
Barry Printing Co.
Commercial Publishing Co.
Dettner-Wilson Press
Gabriel Printing Co., The
Murdock, C. A. & Co.
Partridge, John
Phillips & Van Orden Co.

PUBLICATIONS.
Golden Gate Guide
Guide, The

RAILROADS.
California Northwestern Railroad

REAL ESTATE AND LANDS.
Baldwin, O. D. & Son
Baldwin & Howell
Boardman Bros. & Co.
Bush, David & Sons
Center & Spader
Cotati Co., The
Hooker & Lent
Lyon & Hoag
Magee, Thos. & Sons
Mathews, H. E.
Nares & Saunders (Laton)
O'Brien, Charles F.
Realty Syndicate Co.
Shainwald, Buckbee & Co.
Spencer, William Crane
The 76 Land and Water Co.
Umbsen, G. H. & Co.
Wankowski, W.

RESTAURANTS.
Larsen, C. G.
Sign of Peacock Cafe
Westerfield, P. & Co.

ROOFINGS, BUILDING PAPERS AND PAINTS.
Paraffine Paint Co., The

RUBBER GOODS.
Boston Woven Hose and Rubber Co.
Goodyear Rubber Co.
Gorham Rubber Co.
Winslow, C. R. & Co.

RUBBER STAMPS, ETC.
Patrick & Co.

SAFES AND VAULTS.
Herring-Hall-Marvin Safe Co.

SALT WORKS.
Golden Gate Salt Works

SCIENTIFIC INSTRUMENTS.
Lietz Co., The A.

SEEDS, HERBS AND SPICES.
Volkmann, C. H. & Co.

SCHOOL SUPPLIES.
Milton Bradley Co.

SEWING MACHINES.
Domestic

SEWING SILKS.
Carlson-Currier Silk Co.

SHIPPING AND COMMISSION.
Johnson-Locke Mercantile Co.
Otis, McAllister & Co.
Sloss, Louis & Co.
Williams, Dimond & Co.

SHIPPING.
Rosenfeld, Jno. & Sons.
Urioste & Co.

SLATE.
Eureka Slate Co.

SHOES.
Koenig, Frank

SOAP FACTORY.
Luhn, Otto & Co.

STREET RAILWAYS.
California-Street Cable Railway Co.
United Railroads of San Francisco.

SURETY COMPANIES.
Pacific Surety Co.

SYRUPS.
Pacific Coast Syrup Co.

TAILORS.
Jacobi Bros.
Nordwell, O. W.

TANNERS AND LEATHER DEALERS.
Bissinger & Co.
Brown & Adams
Kullman, Salz & Co.
Legallet-Hellwig Canning Co.

TELEPHONE AND TELEGRAPH.
Pacific States Telephone and Telegraph Co.
Postal Tel. Cable Co.
Western Union Tel. Co.

TENTS AND AWNINGS.
Ames & Harris
Neville & Co.

THEATERS.
Orpheum Circuit Co.

TRANSFER COMPANIES.
Bocarde Drayage Co.
Emmons Co.
McNab & Smith
Renner, Geo.
San Francisco Transfer Co.
The Morton Drayage and Warehouse Co.
Union Transfer Co.

TRUNKS AND BAGS.
Hirschfelder & Meaney

TYPEWRITERS.
Alexander, L. & M.

WALL PAPER.
Uhl Bros.

WATER COMPANIES.
Spring Valley Water Co.

WATER WHEELS.
Pelton Water Wheel Co., The

WHOLESALE GROCERS.
Goldberg, Bowen & Co.
Jennings, Thomas
Sussman, Wormser & Co.
Tillmann & Bendel

WHOLESALE LUMBER AND SHIPPING.
Caspar Lumber Co.
Hechtman, A. J.
Heyman, Julius
Hooper, C. A. & Co.
Matson, Capt. Wm.
Nelson, Chas. Co.
Union Lumber Co.

WINES AND LIQUORS.
Brunschweiger & Co.
California Wine Association
Gier Co., Theo.
Gundlach-Bundschu Wine Co.
Hotaling, A. P. & Co.
Italian-Swiss Colony
Jesse Moore-Hunt Co.
Lachman & Jacobi
Livingston & Co.
Mann Co., C. H., Succrs. to I. De Turk
Martin, E. & Co.
Napa and Sonoma Wine Co.
Schilling, C. & Co.
Schultz, W. A.
Siebe Bros. & Plagemann
Shea-Bocquerez Co.
Sherwood & Sherwood
Van Bergen, N. & Co.
Weimore, Bowen & Co.
Wichman, Lutgen & Co.
Wilmerding-Loewe Co.
Wolff, Wm. & Co.

WOOLENS AND TAILOR TRIMMINGS.
Arnstein, Simon & Co.

THE CALIFORNIA PROMOTION COMMITTEE

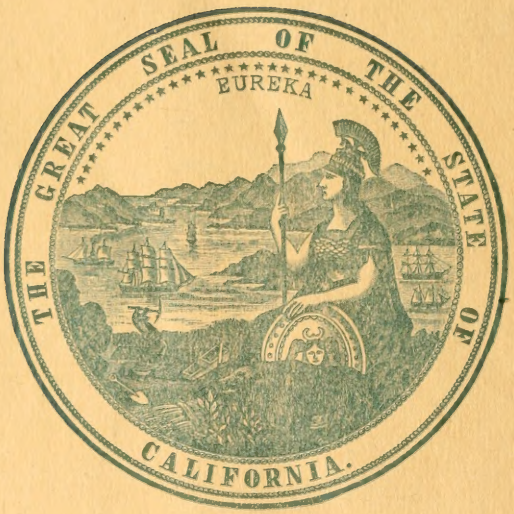
		REPRESENTING
ANDREW SBARBORO, Chairman		Manufacturers and Producers Association
RUFUS P. JENNINGS, Executive Officer		San Francisco Chamber of Commerce
GEO. W. McNEAR, Treasurer		Merchants Exchange of San Francisco
CHAS. F. RUNYON		San Francisco Board of Trade
FRED J. KOSTER		San Francisco Merchants Association

ADVISORY COMMITTEE

HON. GEO. C. PARDEE		Governor of California
BENJ. IDE WHEELER	Berkeley	President University of California
DAVID STARR JORDAN	Palo Alto	President Leland Stanford Jr. University
		REPRESENTING
WILL S. GREEN	Colusa	Sacramento Valley Development Assn.
R. P. LATHROP	Hollister	Central Coast Counties Improvement Assn
C. P. SOULE	Eureka	North Coast Counties
JAMES A. BARR	Stockton	San Joaquin Valley Commercial Assn.
S. F. BOOTH	Fresno	Fresno Chamber of Commerce
M. J. NEWMARK	Los Angeles	Los Angeles Chamber of Commerce
CHARLES S. FEE	San Francisco.	Southern Pacific Company
W. A. BISSELL	San Francisco.	Atchison, Topeka & Santa Fe Railway
R. X. RYAN	San Francisco.	California Northwestern Railway
GEO. W. HEINTZ	San Francisco.	North Shore Railroad
LEWIS E. AUBURY	San Francisco.	California State Mining Bureau

STATE PUBLICITY COMMITTEE

		REPRESENTING
RUFUS P. JENNINGS	San Francisco.	San Francisco County
H. P. WOOD	San Diego	Counties South of Tehachapi
W. A. BEARD	Sacramento	Sacramento Valley Counties
EDWIN STEARNS	Oakland	San Francisco Bay Counties
COLVIN B. BROWN	Stockton	San Joaquin Valley Counties
C. W. CRAIG	Eureka	North Coast Counties
ARTHUR G. BALAAM	Lompoc	South Coast Counties
L. W. JEFFERSON	Hollister	Central Coast Counties
GILBERT B. MORROW	Sonora	Sierra Counties


THE GREAT SEAL OF THE STATE OF
EUREKA
CALIFORNIA.